STATE OF MONTANA
MONTANA DEPARTMENT OF TRANSPORTATION
JOB PROFILE

☐ Update

☐ Formal Review

Date Submitted: 01/14/2012

SECTION I - Identification

Working Title: Database Analyst

Department: Transportation

Job Code Number: 151617

Division & Bureau: Information Services Division/Technical Operations

Job Code Title: Database Analyst

Section & Unit: Network & Operations

Pay Band: 7

Work Address: 2701 Prospect Avenue Helena, MT 59620

Position Number: 81101, 81013

Phone: (406) 444-6200

☐ FLSA Exempt ☑ FLSA Non-Exempt   ☐ Non-Union ☑ MPEA ☐ Blue Collar

Profile Completed By: Byron Molyneaux

Work Phone: 431-1164

Work Unit Mission Statement or Functional Description:

The Information Services Division (ISD) provides a full range of services for the Montana Department of Transportation (MDT). The bureaus within the division plan and set policy, and coordinate, design, install and maintain the department's information technology infrastructure, including network management, server systems administration, computer systems and database administration, applications development and maintenance, integrated systems development, Internet and Intranet development, data security & disaster recovery services, geospatial information systems (GIS), global positioning systems (GPS), and roadway information collection. ISD provides user support, training, imaging and duplication services, IT research and development, internal budgeting, procurement contract administration, and project management. The division includes the MDT Duplicating Services Section.

Describe the Job's Overall Purpose:

The Database Analyst works closely with application development and network operations personnel to understand the needs of their defined database schemas, assists with fine tuning their queries and

supporting their developer tool set. Operative leads in analysis, design, modeling and development, while participating in the implementation and maintenance of database solutions across a variety of technology platforms. Position performs database analysis of existing applications offering recommendations for revising or adapting those applications to improve database performance; independently performs complex work assignments and problem resolution across systems and processes. The incumbent performs data analysis using existing and/or creating new logical models, physical models and data flows; assists developers in determining the logical database model using normalization methodologies and entity/relationship modeling; determines how applications systems could interface with other existing or proposed application systems or networks. The Database Analyst develops and maintains the enterprise application data model and is able to demonstrate the impact of new strategy implementations including, where necessary, the incorporation of data models from other State agencies The incumbent also works with developers to define the data stores and/or complete the database definitions.

SECTION II - *Major Duties or Responsibilities*   *% of Time*

A.   <u>**Database Analysis**</u>   **65%**

This position is a key resource for bringing the enterprise data implications forward during database structure analysis; preferred database platform discussions for a given application; and methodology for upgrade and/or migration planning. As such, the incumbent will influence the enterprise design, integration and maintenance of enterprise databases (Oracle, SQL and other as appropriate) to meet the business needs of MDT.

Database Systems Analysis
- Participates in resolving any application performance issues relating to database
- Develop, implement, and maintain change control and testing processes for modifications to data systems
- Conduct research and make recommendations on database products, services, protocols, and standards
- Participates in database design and optimization tasks
- Plans the future operations and architecture of the system from the perspective of upgrading, data storage and access
- Uses data modeling software to analyze the most appropriate ways to store, organize, use and present data in a database structure
- Provides direction and recommendations regarding database strategy and decisions; helps define vision, identifies timelines and goals that would ensure the implementation of all approved technology initiatives
- Participates in the exploration of options and alternatives for other data stores/databases that should be further exploited in a division-wide POC

Database Knowledge
- Stays current on database products and their offerings including awareness of capabilities, limitations, licensing costs, releases, etc.
- Evaluates and understands all features and functions of currently installed products/releases
- Educates and communicates with development staff on the most efficient ways to create and maintain data for application development

Database Security
- Assists in the development of policies and procedures necessary to ensure the security and integrity of enterprise databases and other data stores
- Participates in the design and implementation of database security models
- Coordinates security model decisions for user access levels for each segment of the database

Database Projects

- Conducts preliminary assessments of user business needs, clearly defining and documenting detailed objectives of what is to be accomplished by developing and implementing new technology or information systems
- Provides a project plan including recommended alternative solutions for achieving project objectives when initiating new projects or entering a new phase of an existing project
- Supports the efforts for major database release level installations and/or migrations
- Shares features and functions knowledge with applications personnel as needed (e.g. when changes occur) ensuring changes/differences are identified
- Works as part of a team to develop plans and complete the integration of data from old systems into new systems.

Other

- Supports the efforts for major database release level installations and/or migrations
- Supports Systems/Operations in exploring and analyzing the impacts to MDT databases made by new application software (BI, GIS, etc.) or other data related technologies
- Functions as a member of the strategic direction committee;

B.   Enterprise Data Analysis   35%

Position is the Information Services Division's primary application data manager. This individual gains and shares knowledge regarding the inter-relationships of all application data supported by MDT ISD primarily through data models and/or process models as necessary. Specific duties will include independently working with functional and business units to identify all system related data; working with the information security team to ensure proper safeguards, data security models and authentication methods are in place; working with the Systems/Operations staff on identifying any potential data architecture impacts; work with the defined data architecture team to ensure congruity in the overall enterprise architecture; and implement strategic data initiatives. The incumbent will also develop appropriate level data diagrams to support enterprise information understanding.

- Develops and maintains an enterprise data architecture that articulates the principles, blueprints and standards, across the data domains of transaction, interaction and analytic, which are used in the deployment of technology solutions for MDT/ISD Customers
- Develops and maintains the Enterprise Data Model (EDM) to serve as both the strategic and tactical planning vehicles to manage enterprise data; working closely with business data owners
- Develops and maintains a data dictionary, standardizing data names and definitions
- Participates in data design and analysis activities and conducts appropriate technical data design reviews at various stages during the System Development Life Cycle (SDLC)
- Participates in the review process for system design specifications, process models, data architecture and/or data flow diagrams
- Works with development project teams to adopt a strong data reconciliation process concerning the replication of data that includes defining reconciliation architecture
- Looks across multiple applications to determine options and best strategies to connect systems together to reduce data duplication
- Involved in identifying the desktop modeling tools and assisting in their installation as needed
- Identifies vital information to business processes for determining disaster recovery, verification and infrastructure requirements
- Works with staff to identify sensitive information and evaluate methods of handling that data

- Identifies and recommends specific infrastructure initiatives to further enhance the Enterprise Data Architecture Plan, aligning with the overall MDT business direction and ISD strategies
- Recommends data policy including improvements to data governance processes and creates data governance quality processes
- Guides, educates and mentors the Data Architecture Strategy directives, principles and standards to individuals who play data-related roles in the agency (business analysts and applications development teams)
- Provides consulting to business managers/business IT liaisons as well as business partners in defining data architecture to support new and on-going projects
- Creates and delivers presentations, communicating technical and highly complex information to management and public groups
- Collaborates with outside communities of interest; researches trends and identifies opportunities with other data governance organizations.

The following duties and/or specific tasks listed under section II above are considered "essential functions" because they require specialized expertise and skill and are the primary reasons the job exists (they must be performed by this position with or without accommodations):

Duties A and B: Database Analysis and Enterprise Data Analysis

The following mental and physical demands are associated with these essential functions:

PHYSICAL
- Light lifting (less than 10 lbs.)
- Carry light items (papers, books, laptop)
- Remaining seated for extended periods of time, with occasional walking; standing; bending
- Operating a personal computer
- Effective, professional communicating in writing, in person and over the phone
- Limited travel around the Helena area and occasional district visits

MENTAL
- Mediating conflicts between stakeholders, vendors, and technologists
- Ability to multi-task
- Conduct research
- Comparing data
- Compiling information
- Analyzing, inductive and deductive reasoning
- Synthesizing
- Making decisions in a timely manner to ensure projects are not delayed
- Coordinating
- Negotiating
- Instructing
- Dealing with the internal business users at all levels
- Demands for accuracy in all aspects of work
- Creative problem solving
- Relationship builder – listening, responsiveness, trust
- Dealing with agency business users at all levels
- Dealing with cross-agency users and SITSD at all levels

- Change Agent/Catalyst

Does this position supervise others? ☐ **Yes** ☑ **No**

Attach an Organizational Chart.

SECTION III - Minimum Qualifications - List minimum requirements for the first day of work.

Critical knowledge and skills required for this position:

KNOWLEDGE:
Expanded knowledge or experience with computer operating systems (both server and PC; MDT environment is currently VMS, Linux and Windows); knowledge of the thoeries and developmental applications of computer science including systems development, implementation and managemet - SDLC; thorough knowledge of Oracle RDBMS and related tools, a basic knowledge of SQL database; understanding of database from both developer and systems view; understanding of security principles; high-level understanding of disaster recovery and business resumption planning contrasted with high availability; familiarity with domain structures and user authentication; basic understanding of networking topology; understanding of vitual technologies. Knowledge related to data modeling, data governance, and data dictionaries including principles and standards across the data domains of Transaction, Interaction and Analytic, which are used in the deployment of technology solutions for MDT/ISD Customers.

SKILLS:
Skill in program planning and implementation, data collection and analysis, reading comprehension, active listening, writing, and speaking, active learning, service orientation, operations analysis and quality control. Must have excellent technical, conceptual, deductive and inductive reasoning, analytical, critical thinking, problem-solving, and technical project management skills in order to interact effectively with the full spectrum of contacts on an ongoing basis and the ability to work under demanding deadlines; act independently, operating with only general direction. Development and implementation of standards, policies and procedures, discern and recommend appropriate information processes and technology options. Need proficiency in MS Office (Word, Excel, Outlook), keyboarding and scripting.

Behaviors required to perform these duties:

See MDT Core Behaviors

Education:
Check the one box indicating minimum education requirements for this position for a new employee the first day of work:

☐ No education required	☐ Related AAS/2-years college/vocational training
☐ High school diploma or equivalent	☑ Related Bachelor's Degree
☐ 1-year related college/voc. training	☐ Related Master's degree

Please specify the acceptable fields of study:

Acceptable: BA/BS Computer Science or related field

Experience:
Check the one box indicating minimum work-related experience requirements for this position for a new employee the first day of work:

- ☐ No prior experience required
- ☐ 1 year
- ☐ 2 years
- ☐ 3 years
- ☑ 4 years
- ☐ 5 or more years

Other specific experience (optional):

Four (4) years of general technical data center or systems operations experience, two (2) or more of those years should be focused on Data Architecture or Oracle RDBMS and its related tools. The IT experience includes in-depth knowledge of application development technologies, tools, and methodologies; ability to provide technical leadership and command respect at all levels of the organization. Other experience requested is a demonstrated ability to translate highly complex and ambiguous problems into actionable components. Specific experience in business analysis from the data perspective, and experience with blueprinting and developing conceptual, logical and physical data models at the enterprise level is desirable.

Alternative Qualifications:
This agency will accept alternative methods of obtaining necessary qualifications.

☑ Yes ☐ No

Alternative qualifications include:

1) Up to four years of additional related work experience may be substituted for the four year degree requirement although it would be treated as a 'non-related' BA/BS degree. Thirty (30) completed and passed semester credits (or the equivalent in quarter credits) from an accredited college or university will be considered as one year of college.

2) In replacement of the related Bachelor's Degree requirement, MDT would accept:
- a non-related BA/BS degree and a minimum of 8 years IT related experience as defined above OR

- an AA/AS Degree in Computer Science or related degree and a minimum of 6 years IT related experience as defined above

SECTION IV – Other Important Job Information

☐ Valid driver's license

☑ Fingerprint background check   ☐ Other; Describe

Other information including working conditions such as shifts, lifting requirements, travel or hours.

Responsibilities require the incumbent to work the majority of their time within predetermined timeframes. Some work will require after hours or weekend activity to ensure minimal impact to the

agency user community. The predominate work is performed in an office setting during normal working hours and often requires the incumbent to sit for extended periods of time while working at a desk and computer. Limited day and overnight travel may be required to support equipment in different site locations.

SECTION V – Signatures

Signature indicates this statement is accurate and complete.

Employee:

Name: _____   Title: Database Analyst _____

Signature: _____   Date: _____

Immediate Supervisor:

Name: Tom O'Sullivan _____   Title: Network & Operations Team Supervisor _____

Signature: _____   Date: _____

Bureau Chief:

Name: Byron Molyneaux _____   Title: Technical Operations Manager _____

Signature: _____   Date: _____

Division/District Administrator:

Name: Mike Bousliman _____   Title: Administrator, Information Services Division ___

Signature: _____   Date: _____

Department Designee:

Brent Rabe/Designee   Chief Human Resources Officer
                                                             Human Resources Division

Signature: _____   Date: _____